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A man with braided hair is looking at a tablet in a clothing store. He is wearing a dark blue button-down shirt. In the foreground, there is a stack of folded, patterned towels. The background shows clothing racks and store lighting. The image has a blue overlay at the bottom with white text and decorative light blue circles and lines.

Retail Technology Trends for 2024 and Beyond

A Changing Retail Landscape

The retail industry in 2024 is a tapestry woven from the latest innovations and time-tested traditions, intertwining the rapid evolution of e-commerce with the enduring resilience of brick-and-mortar stores. Amid an explosion of digital touchpoints in-store and online, retailers are in pursuit of evermore dynamic and connected customer and employee experiences.

Many of these technologies are embodied by what has come to be known as the Store of the Future: retail environments that blend the physical and the digital, combining advanced customer-facing solutions to enhance the experience with backend technology to optimize operations.

Even after years of e-commerce innovation, the allure of in-person shopping remains strong. In fact, [Forrester predicts](#) that by 2028, 72% of shopping will still happen in physical stores. That in-store shopping experience, however, will keep pace with its digital counterpart as retailers reimagine store environments as elements of the wider omnichannel shopping experience.

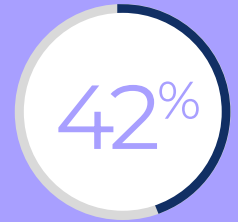
Consumer expectations are the primary catalysts for this transformation. Today's consumers are not just buyers; they are informed participants seeking convenience, speed, and, most importantly, personalization in their shopping experiences. This shift in consumer behavior is driving retailers to innovate. [According to IDC](#), 42% of retailers cite improving customer experience as their top priority for digital transformation. They are increasingly leveraging cutting-edge technology in data analytics, artificial intelligence (AI), the Internet of Things (IoT), payments, and more to not only meet but anticipate customer needs, thereby enhancing engagement and driving revenue growth.

The retail industry is also adapting to changes in supply chains with improved resiliency and visibility. By using data analytics to optimize sourcing and make on-the-fly adjustments, while using IoT and real-time location monitoring technology to track items, retailers are able to better forecast, ensure product availability, reduce manual tasks, and improve customer and employee experiences.

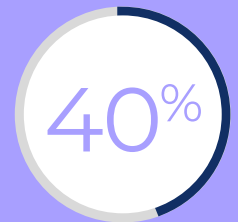
Finally, the labor market in retail continues to be tight. In response, retail leaders are increasingly focused on the experience of frontline employees—and they are making technology investments accordingly. In its [2023 Global Retail Survey](#), IDC reported that 40% of retailers cited improving employee experience as a top priority for digital transformation efforts.

All of these efforts depend on the lifeblood of connectivity. The retailers leading the way are taking a strategic approach when it comes to planning, building, and optimizing network architectures to support technology applications today and in the future. Still, there remains a gap. IDC reports in its [Worldwide Retail 2024 Predictions](#) that 42% of retailers are concerned that their connectivity is too unreliable or slow to support their in-store technology.

In this report, we'll examine how cutting-edge experiences and technology innovation are redefining the retail industry from end to end.

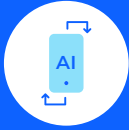


of retailers cite improving customer experience as their top priority for digital transformation



of retailers cited improving employee experience as a top priority for digital transformation efforts

SOURCE:
Global Retail Survey
2023, IDC



95%

of retailers will test and invest in generative AI to enhance product data, customer support and experience through 2027

SOURCE:

IDC FutureScape: Worldwide Retail 2024 Predictions

The Impact of AI and Machine Learning

The most hyped emerging technology across industries, artificial intelligence has unsurprisingly found a foothold in retail. Investments in AI, machine learning (ML), and natural language processing (NLP) are accelerating. The explosion of generative AI in particular has taken retail by storm, with IDC predicting that 95% of retailers will test and invest in generative AI to enhance product data, customer support, and customer experience through 2027.

Hyper-Personalized Shopping Experiences through AI

AI has brought about a paradigm shift in how customers interact with retailers. Retailers use these technologies to analyze vast amounts of consumer data, providing instant insights into shopping habits, preferences, behaviors, and next recommended action, which can also be automated. Thus, AI enables the creation of hyper-personalized experiences, where product recommendations and marketing messages are tailored to individual consumers. This level of personalization not only enhances the customer experience but also drives higher conversion rates and customer loyalty.

Natural Language Processing, meanwhile, plays a crucial role in enhancing customer service. Underpinning generative AI, it powers chatbots and virtual assistants that provide real-time, efficient customer support, not just online but in-store using conversational voice commands. These AI-driven assistants can handle a range of queries, from product inquiries to post-purchase support, ensuring a seamless customer experience.

AI in the Supply Chain

In inventory management and supply chain operations, ML algorithms predict demand patterns, optimize stock levels, and streamline logistics. This predictive capability helps in reducing overstocking or stockouts, thereby minimizing costs and waste. Retail leaders also use AI for store layout optimization, pricing strategies, and detecting fraudulent activities, thus making operations more efficient and secure.

Retailers and suppliers are also tapping into AI to solve old challenges on a new scale, like the “traveling salesman” problem—that is, looking at how routes and sourcing can be optimized to shorten distances and improve efficiency. This approach can also improve supply chain resilience while also reducing costs, delivery times, and waste, contributing to a more sustainable retail environment.

AI as a Means to Enhance Employee Experience

Beyond its pivotal role in customer engagement and supply chain optimization, AI is expected to be equally transformative in elevating the employee experience in retail. AI-driven tools empower staff with actionable insights, freeing them from routine tasks to focus on higher-value activities. For instance, AI can assist in inventory management, enabling employees to maintain optimal stock levels efficiently. Moreover, AI-powered analytics can provide staff with real-time information about customer preferences and behaviors, aiding in personalized service as well as inventory availability queries. This not only enhances job satisfaction by reducing manual workload but also enables employees to engage more meaningfully with customers, fostering a more dynamic and fulfilling work environment.



What AI Means for Security, Edge Computing, and Connectivity

With the expansion of AI in retail environments, IT leaders will need to evolve their approach to networking, security, and data management. Generative AI is setting new benchmarks for connectivity demands. Retailers are adopting AI-driven applications like personalized shopping experiences, automated inventory management, and customer behavior analytics. These applications require substantial data processing capabilities and swift data transfer rates to function effectively. This comes on the heels of years of increasing bandwidth consumption due to the proliferation of on-premise digital experiences.

To accommodate the low-latency requirements essential for interactive and generative AI applications, retailers may need to process more data closer to the source. By processing data near where it's generated, edge computing reduces the need to send vast amounts of data back and forth to distant data centers, thereby minimizing latency and enhancing the efficiency of AI applications.

The agility of software-defined networks is also crucial, allowing retailers to dynamically allocate bandwidth and prioritize network resources as per the demands of bandwidth-intensive AI applications. This flexibility is vital in ensuring that critical AI functions receive the speed they need without compromising other operational aspects of the business.

Operational Innovation Through IoT

The Store of the Future is a completely connected one, from the back office, to the items on the shelves, and even the shelves themselves. The retail sector is no stranger to the Internet of Things, but while the technology achieves new levels of maturity and ubiquity, the greenfield possibilities for future innovation remain exciting. By leveraging connected devices and sensors to gather and analyze data in real-time, retailers are finding new ways to enhance customer and employee experiences while streamlining operations. That manifests itself via shelves that indicate—and even automatically reorder goods—when they are empty, or facilities monitoring sensors to flag when repairs are needed, or even occupancy sensors to help gauge foot traffic through stores and optimize in-store flow. The wider implementation of IoT in retail settings marks a significant leap towards a more efficient, customer-centric, and data-driven industry. At the same time, the richness and volume of the data being processed requires fast, and reliable connectivity solutions to deliver on the promise of IoT solutions.

Real-Time In-Store Analytics Using IoT

IoT technology in retail is playing a role in understanding and enhancing the in-store customer journey. Through sensors and connected devices, retailers can track customer foot traffic, monitor interactions with products, and gather valuable insights to optimize store layouts. Smart shelves, equipped with weight sensors and Radio Frequency Identification (RFID) tags, offer real-time inventory tracking and alerts for restocking, ensuring products are always available when customers need them.

Smart Inventory Management Through IoT Solutions

IoT is also transforming inventory management with its ability to provide real-time updates on stock levels, automated reordering, and efficient warehousing. For example, smart warehouses utilize IoT to locate items swiftly, and improve overall efficiency. IoT sensors in supply chain management enable real-time tracking of products, ensuring they arrive on time and in good condition. By 2028, [it is expected that 55% of grocery supply chains](#) will deploy intelligent IoT solutions, significantly reducing food waste and improving inventory management.



Impact on Operational Efficiency and Customer Experience

IoT technologies are significantly enhancing operational efficiency in retail. From reducing energy consumption through smart environmental controls to enabling automated checkout systems, IoT is expected to help manage costs and waste reduction. Furthermore, IoT provides retailers with comprehensive data analytics, enabling them to make informed decisions about product placement, marketing strategies, personalization, and customer engagement. Enhanced customer experiences are achieved through improved store navigation, making shopping more convenient and enjoyable for consumers.

From an employee experience perspective, IoT connectivity can be used to meaningfully reduce manual tasks. Electronic price labels on shelves, for example, can automatically update without employee intervention. Remote issue detection can preclude hourly restroom checks for cleanliness, leaving employees more available to serve customers.

Enhancing Efficiency and Customer Experience with Real-Time Location Systems

Real-time location systems (RTLS) are increasingly utilized in retail environments, serving as vital tools for tracking products, assets, and customer movements. These systems, encompassing technologies like smart shelves and RFID tags, enable retailers to manage inventory with better accuracy and efficiency.



The Evolution of Payment Technologies in Retail

The Shift to Frictionless and Secure Checkout

One of the most visible changes in retail comes through the lightning-fast adoption of touchless and frictionless checkout systems, emphasizing both convenience and security. This evolution is marked by the adoption of cutting-edge technologies like biometric payments, self-checkout systems, and “just walk out” technologies. These innovations are streamlining the checkout process, helping to eliminate long queues, and enhancing the overall shopping experience. Biometric payments, using fingerprints or facial recognition, are gaining popularity for their ease of use. Self-checkout systems and “just walk out” technologies, like those [pioneered by Amazon Go](#), offer customers the convenience of shopping without the traditional checkout process, as items are automatically charged to their accounts upon exiting the store.

Innovations in Payment Technology

The landscape of payment technology is continuously evolving with the introduction of various types of digital payments and AI-driven fraud detection systems. While BNPL (buy now pay later) offerings may not be as popular as a few years ago, retailers are experimenting with biometric-based payments. AI-driven fraud detection systems, on the other hand, leverage machine learning algorithms to identify and help prevent fraudulent activities in real-time. According to [IDC FutureScape's Worldwide Retail 2024 Predictions](#), by 2026, one-third of retailers will implement computer vision technology to enhance self-checkout systems, reducing errors and theft (shrink) by 75%, and making Buy Online, Pick-up In-Store (BOPIS), and curbside services 25% more efficient.

Finally, tablets, remote point-of-sale systems, and even wearables are becoming more ubiquitous in retail to facilitate and process purchases—and retailers are preparing accordingly. In its Retail 2024 Predictions, IDC says that 75% of retailers are likely to enable clienteling, inventory/fulfillment processes, queue busting, mobile POS, and employee self-service by deploying mobile devices, wearables, and BYOD programs by 2025.

Balancing Security with Convenience

In this era of rapid tech innovation, retailers face the challenge of balancing the need for secure transactions with consumer demands for convenience. The key lies in integrating advanced security measures into user-friendly payment systems. Retailers are achieving this balance by employing technologies like tokenization, which helps secure card information, and two-factor authentication, which adds an extra layer of security without compromising ease of use. Retailers are continuously exploring innovative solutions to help ensure that payment technologies are both safe and streamlined, catering to the evolving expectations of today's consumers.

By 2026

One third

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Reducing errors & theft by:

75%

Improving curbside service efficiency by:

25%

SOURCE:

IDC FutureScape: Worldwide Retail 2024 Predictions



Blending Physical and Digital Retail with Immersive Technologies

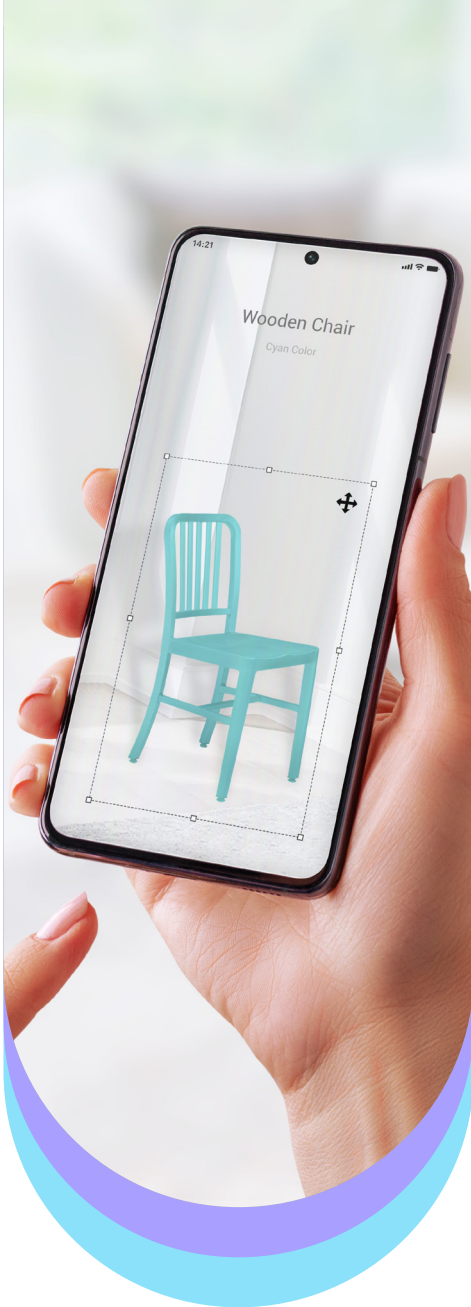
The lines between digital and brick-and-mortar selling environments continue to blur, as retailers try to infuse more digitally enabled experience into in-store environments, while bringing the human connection that defines in-store shopping to the online realm. The end result? An increasing “phygital” shopping experience that leverages emerging technologies like Augmented Reality (AR) and Virtual Reality (VR) alongside new engagement techniques like livestream shopping and virtual clienteling to reshape the way consumers interact with brands and products.

Elevating Retail Experiences Through AR and VR

Some products are best evaluated in context. You might want to see how a sofa would look in your living room, or how a suit jacket would look with a certain pair of pants you own. Enter AR and VR. By overlaying digital imagery in the real world via AR or diving into a digital world via VR, these technologies are fundamentally changing how customers experience shopping. Imagine an in-store mirror that lets you “try on” new looks—and instantly share them with your friends. Virtual try-ons and interactive product demonstrations are not just gimmicks; they represent a significant shift towards creating truly immersive retail environments.

Personalized Retail Engagement through Livestream Shopping and Virtual Clienteling

The rapid rise of livestream shopping marks a significant evolution in customer engagement. Live shoppable videos, hosted on social media or a brand’s own website, led by brand representatives and retail associates create moment-in-time events, fostering community and building affinity. The experience blends entertainment with commerce, creating a dynamic where customers can interact with products in real time, ask questions, and make purchases directly through live streams. Store associates are becoming brand influencers, utilizing their deep product knowledge and trustworthiness to forge stronger, more personal connections with customers—and with their employer. This approach is especially beneficial as it brings authenticity and expertise to the forefront of customer engagement. It is more than a fleeting trend; it’s a burgeoning domain within e-commerce, with sales potentially comprising [10-20% of all eCommerce transactions](#) by 2026.



Virtual clienteling, meanwhile, blends traditional clienteling—highly personalized, one-to-one sales relationship building seen primarily in luxury retail—with modern digital tools. It replicates the personal touch of in-store experiences online, utilizing detailed client data along with digital communication platforms like AI chatbots, live and video chats, social messaging, and co-browsing. Key to virtual clienteling is maintaining the one-to-one connection that characterizes traditional clienteling, but in a digital context. This method combines in-depth customer data with omnichannel communication to cultivate and sustain personal relationships with consumers. It enhances customer support and fosters brand loyalty, leading to higher conversion rates. It enables sales associates, who may even be engaging from physical stores, to connect with online customers in a manner that feels personal and direct, deepening customer connections through this digital yet intimate approach.

Envisioning the Future of Retail Beyond 2024

The journey of retail is not a linear path but an evolving landscape marked by innovation and transformation. Retailers must not only keep pace but also anticipate and shape future trends, leveraging cutting edge technology to enhance experience and streamline operations—as well as advanced networking and connectivity to enable the delivery of these technologies across channels.

It is not just about adapting to change but about becoming architects of the retail future. By prioritizing innovation, transformation, and reliable connectivity, retailers aren't just preparing for the challenges of tomorrow; they are actively forging a new and exciting retail reality. In this dynamic landscape, the convergence of customer and employee experiences, powered by cutting-edge technology, will help drive unprecedented growth and opportunities.

Learn more about how Comcast Business is helping retailers leverage technology to power customer and employee experiences.

[Learn more](#)

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